CLAIMS:

1. A method for determining the percent viability of cells in a sample, comprising providing a sample containing said cells, detecting the total cell count, contacting said cells with molecule or dye that is detectably altered by enzymatic activity of a viable cell, detecting enzymatically altered dye or molecule, thereby detecting the number of viable cells and comparing the number of total cells with the number of viable cells thereby determining the percent viability.

2. The method of claim 1, wherein said cells are bacteria.

3. The method of claim 1, wherein said cells are yeast.

4. The method of claim 1, wherein said total cell count is determined by a method selected from the group consisting of native UV absorption, turbidity testing, hemacytometer measurements, fluorescence, and dye exclusion.

5. The method of claim 4, wherein said total cell count is determined by UV absorption.

6. The method of claim 1, wherein the enzymatic activity is esterase activity.

7. The method of claim 1, wherein said enzymatically altered dye or molecule comprises fluorescein diacetate or OREGON GREEN™.

8. The method of claim 1, wherein detection is performed by a flurorometer.

9. A method for detecting viable cells, comprising providing a sample containing cells, contacting said sample with a dye that diffuses or is transported into said cells

and wherein said dye is detectably altered by enzymatic activity of a viable cell, thereby detecting viable cells in a sample.

10. The method of claim 9, wherein said cells are bacteria.

11. The method of claim 9, wherein said cells are yeast.

12. The method of claim 9, wherein said total cell count is determined by a method selected from the group consisting of native UV absorption, turbidity testing, hemacytometer measurements, fluorescence, and dye exclusion.

13. The method of claim 12, wherein said total cell count is determined by UV absorption.

14. The method of claim 9, wherein the enzymatic activity is esterase activity.

15. The method of claim 9, wherein said enzymatically altered dye or molecule comprises fluorescein diacetate or OREGON GREEN™.

16. The method of claim 9, wherein detection is performed by a flurorometer.

17. A method for quantitating viable cells in a sample, comprising providing a sample containing said cells, contacting said cells with molecule or dye that is detectably altered by enzymatic activity of a viable cell, detecting ezymatically altered dye or molecule, thereby detecting the number of viable cells in said sample and obtaining a value therefrom and correlating the detected viable cell value with a standard value, thereby quantitating the viable cells in said sample.

18. The method of claim 17, wherein said cells are bacteria.

19. The method of claim 17, wherein said cells are yeast.

20. The method of claim 17, wherein said total cell count is determined by a method selected from the group consisting of native UV absorption, turbidity testing, hemacytometer measurements, fluorescence, and dye exclusion.

21. The method of claim 20, wherein said total cell count is determined by UV absorption.

22. The method of claim 17, wherein the enzymatic activity is esterase activity.

23. The method of claim 17, wherein said enzymatically altered dye or molecule comprises fluorescein diacetate or OREGON GREEN™.

24. The method of claim 17, wherein detection is performed by a flurorometer.

25. A method for quantitating total and live cells in a sample, comprising measuring total fluorescence of cells in a sample and comparing to a standard value, thereby quantitating total cells in said sample; contacting a sample with a fluorescent dye that is metabolically altered by live cells; said dye having fluorescence properties that are measurably altered when modified by live cells, detecting the metabolic alteration of the dye thereby obtaining a measurement value and comparing said value to a standard value, thereby quantitating live cells in said sample.

26. A method for measuring the number of total and live yeast, bacteria or other cells in a sample, comprising measuring the native fluorescence of cells in suspension, contacting said cells with a dye that penetrates into the interior of yeast or bacteria and is

metabolically modified to a measurable parameter by live cells, measuring the total fluorescence and fluorescence properties provided by the metabolic alteration of said sample and correlating said fluorescence to the number of total and live cells in said sample or a fraction of the sample and determining the percent viability of said sample.

27. A kit for quantifying yeast or bacteria, comprising a cell suspension solution, a cell penetrating dye, and instructions for detecting dye that correlates to hemocytometer counts, plate counts or other methods of counting viable cells.

28. The kit of claim 27, wherein said dye is a dye that is enzymatically and detectably altered following penetration of viable cells.

29. A kit for quantifying yeast or bacteria or mammalian cells, comprising: a first container containing a first solution, a second solution containing a compound that penetrates cell membranes and is metabolized to a fluorescent dye or other detectable dye that is measurable, and instructions for using the same.

30. The kit of claim 29, further comprising a means for mixing said first solution with a sample containing an unknown number of living cells and nonliving cells, means for concentrating the cells from the mixture of said first solution with said sample and removing solids from the remainder of said mixture, and measuring native fluorescence of cells in said solution.

31. The kit of claim 29, further comprising a means for mixing said second solution with said cells to form a second mixture, and means for illuminating the mixture of said second solution with said cells with excitation light and measuring fluorescence emitted by said mixture, and thereby determining the amount of metabolically modified dye present in the cells that is proportional to the number of viable cells in said second solution.

32. The kit of claim 29, further comprising a third solution containing a compound or compounds that increase the rate of uptake of dye into cells or speeds up the rate of conversion the detectable fluorescent form of the dye inside said cells in second solution.

33. A device that comprises solid fluorescent material consisting of an adaptor and a compound that can be used to calibrate the instrumentation used for detecting fluorescence in the cells.